

Center for Integrated Marine Technologies (CIMT)

Region: West Coast, California

Date Project Initiated: August 2002
(current number: NA16OC2936)

Brief Project Summary

The Center for Integrated Marine Technologies' (CIMT) mission is to create a coastal ocean monitoring program that links new technologies and data across disciplines of marine science to address key questions for the management and conservation of California coastal marine resources. These technologies are being used to investigate the critical linkages among physical forcing mechanisms, the availability of critical nutrients, the distribution, abundance, and species composition of phytoplankton and zooplankton, and the distribution, abundance, and species composition of top-level consumers, including fish, seabirds, marine mammals, and sea turtles.

Key Accomplishments

Harmful Algal Blooms

- CIMT developed rapid-response remote sensing products with Dr. Richard Stumpf of the National Oceanic and Atmospheric Administration (NOAA) for identification of potential harmful algal bloom problems for offshore California. This information, as well as population abundance and toxin analysis data on toxic algal species, is provided regularly to the California Department of Health Services.
- CIMT identified urea-nitrogen as a potentially important enhancing factor in the production of domoic acid, which is produced by the harmful algae *Pseudo nitzschia*. In addition to several scientific presentations and publications, CIMT is also working with Central Coast Long Term Environmental Assessment Network (CCLEAN), the California Department of Health Services, and the NOAA Oil Spill Prevention and Response (OPSR) Santa Cruz office to assess the role of nonpoint source pollution, such as urea, in impacting wildlife via harmful algal events.

Current Mapping and Oil Spill Response

- CIMT provides an opportunity to extend and enhance the product development capabilities of California's Coastal Ocean Currents Monitoring Program (COCMP). The basic products derived from COCMP's high-frequency radar network are maps of surface ocean currents produced each hour out to distances ranging from 50 to 200 kilometers from shore. This observing system capability has been established for the Monterey Bay area, and it will be expanded to produce continuous maps for the region around central California. CIMT is contributing to the development of value-added products based on the COCMP hourly current mapping data. CIMT enhancements supported real-time spill trajectory mapping for the NOAA Safe Seas 2006 oil spill exercise in August 2006 in the offshore waters between San Francisco and Monterey Bay.

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This project is contributing to the Integrated Ocean Observing System (IOOS) by

- Contributing to a regional association, the Central and Northern California Ocean Observing System (CeNCOOS)
- Providing meteorological and oceanographic information and data for local resource managers, recreational users, and fisheries managers
- Supporting real-time spill trajectory mapping capability for use in oil spill response



Integrated Ocean Observing System, Regional Association Support

- Since 2003 CIMT has endeavored to provide cogent committee, personnel, and resource support to the Central and Northern California Ocean Observing System (CeNCOOS). At least one CIMT member participated in each of the five CeNCOOS interim committees, and CIMT currently has members on the governing council and participants within the working groups, sharingg the CIMT coordinator's time and resources to help accomplish the goals of CeNCOOS.

Fisheries Management

- CIMT's shipboard survey hydroacoustic data and zooplankton net sample data sets were identified by the National Marine Fisheries Service as a source for generating krill biomass estimates for development of krill fishery regulations. CIMT investigators participated in a workshop to identify feasible means to assess krill abundance and subsequently submitted an advisory letter to the Pacific Fisheries Management Council (PFMC), in conjunction with the Pacific Federation of Fishermen's Association, Oceana, the Sierra Club, the Honorable Leon Panetta, and other nongovernmental organizations and fishermen's groups, to outline the rationale and need for a prohibition of fishing on krill. In March 2006 the PFMC designated krill a "prohibited harvest" species and is currently establishing essential fish habitat for krill.
- In collaboration with Moss Landing Marine Labs, CIMT sea lion data were used to model the impacts of pinnipeds on listed salmon and rockfish stocks for federal management agencies. The Pacific Fisheries Management Council and the National Marine Fisheries Service are both using this information to better inform management decisions.

Real-Time Wind Modeling

- A real-time wind model for marine recreational users was developed by CIMT through collaborations with Jet Propulsion Labs, the Naval Postgraduate School, the Monterey Bay Aquarium Research Institute, Moss Landing Marine Labs, Monterey Bay National Marine Sanctuary, and CeNCOOS. End user feedback helped to refine the wind model, which is available on the Web at <http://cimt.jpl.nasa.gov>.

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